

Air Force Materiel Command



Development Planning (DP)

Kevin "Thing" Adams
HQ AFMC/A5CC

Jeff Loren
SAF/AQRE
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Integrity ★ Service ★ Excellence



Overview

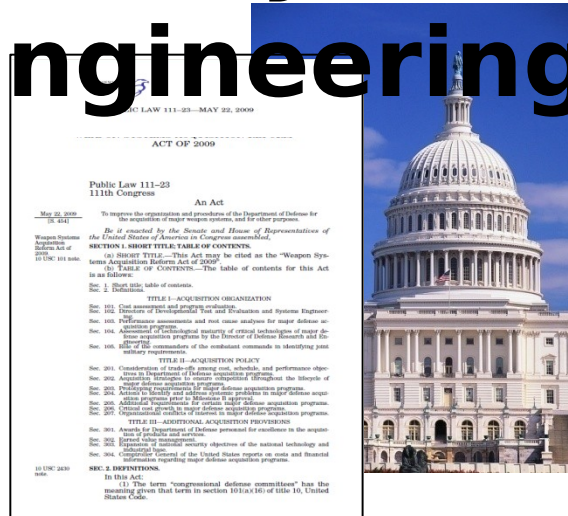
- **Revitalizing DP**
- **What Is DP?**
 - **Definition**
 - **Purpose**
 - **Process**
 - **Products**
- **AF DP Policy and Guidance**
- **AF DP Governance Process**
 - **Status**
 - **AF DP Resources**
 - **Way Ahead**
- **Summary / Takeaways**



Why revitalize DP and Systems Engineering?

Weapon Systems Acquisition Reform Act of 2009 requires:

- Director, Systems Engineering to “review the organizations and capabilities of the military departments with respect to ... **development planning** ... and identify needed changes or improvements”
- SAE to “develop & implement plans to ensure the military department has provided appropriate resources for **Development planning and systems engineering organizations with adequate numbers of trained personnel** ... ”



A 2007-2008 GAO Acquisition study found that:

- Only 134 of 268 critical technologies were accepted into a product’s design based on more than lab demo of basic performance, tech feasibility, and functionality
- Programs that held Systems Engineering events prior to beginning “development” experienced 20% less cost growth and 8-9 months less in IOC delays



US Government leadership directed DP revitalization



Why revitalize DP and Systems Engineering?

In 2008, SECDEF Robert Gates declared:

“... this Department must ... stop programs that significantly exceed their budget or which spend limited tax dollars to buy more capability than the nation needs ... we must ensure that requirements are reasonable and technology is adequately mature to allow the



Department to successfully execute the programs.”
Dec 08: New DoDI 5000.02 Acquisition Regulation



Updating:

(a.) New Acquisition milestone: Materiel Development Decision (MDD)



(b.) New policy: Competitive Prototyping in Technology Development acquisition phase



(c.) New policy: Conduct Preliminary Design Review (PDR) prior to Milestone

DP ensures requirements are reasonable and technology is mature

DP is essential to plan, budget, & execute IAW new acquisition regulations

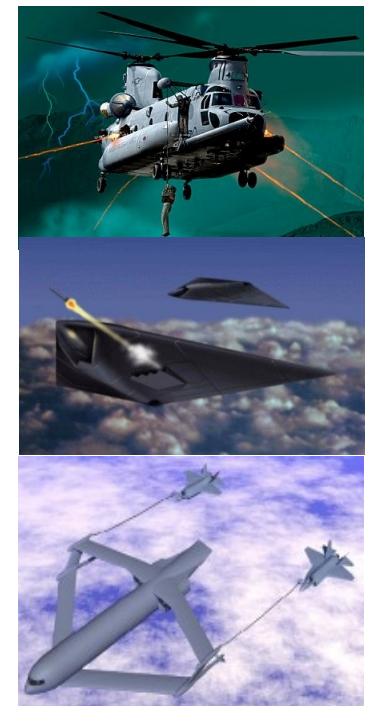
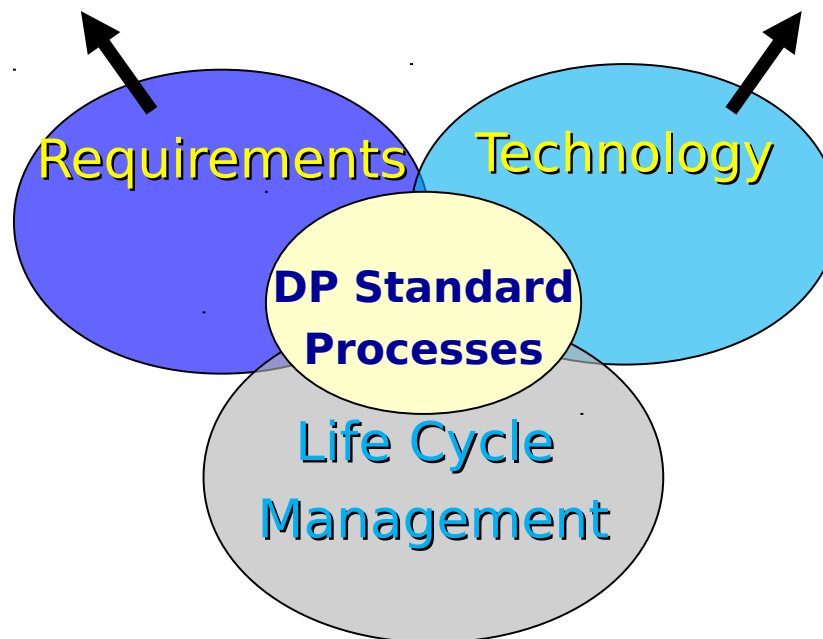


Definition of DP

"DP is the materiel contribution to capability planning. It ... brings its greatest leverage prior to Materiel Development Decision (MDD). DP collaboratively identifies and develops concepts (prospective materiel solutions) in response to operational capability needs."

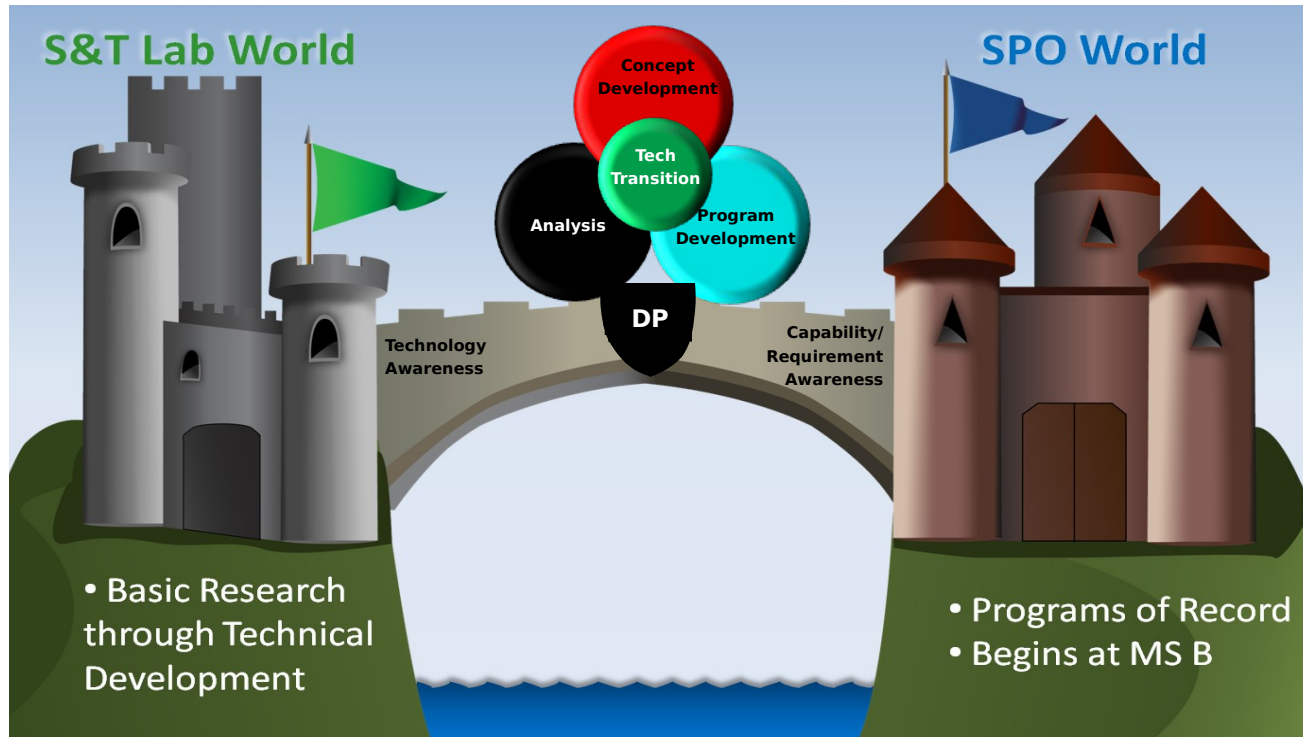
AFI 63-101, Acquisition and Sustainment Life Cycle Management

- **Bridge warfighter capability needs**
- **Evaluate system-of-systems concepts**
- **Incorporate life cycle planning**
- **Understand technology gaps**
- **Identify and assess risks**
- **Start high confidence program**





DP and S&T Linkage



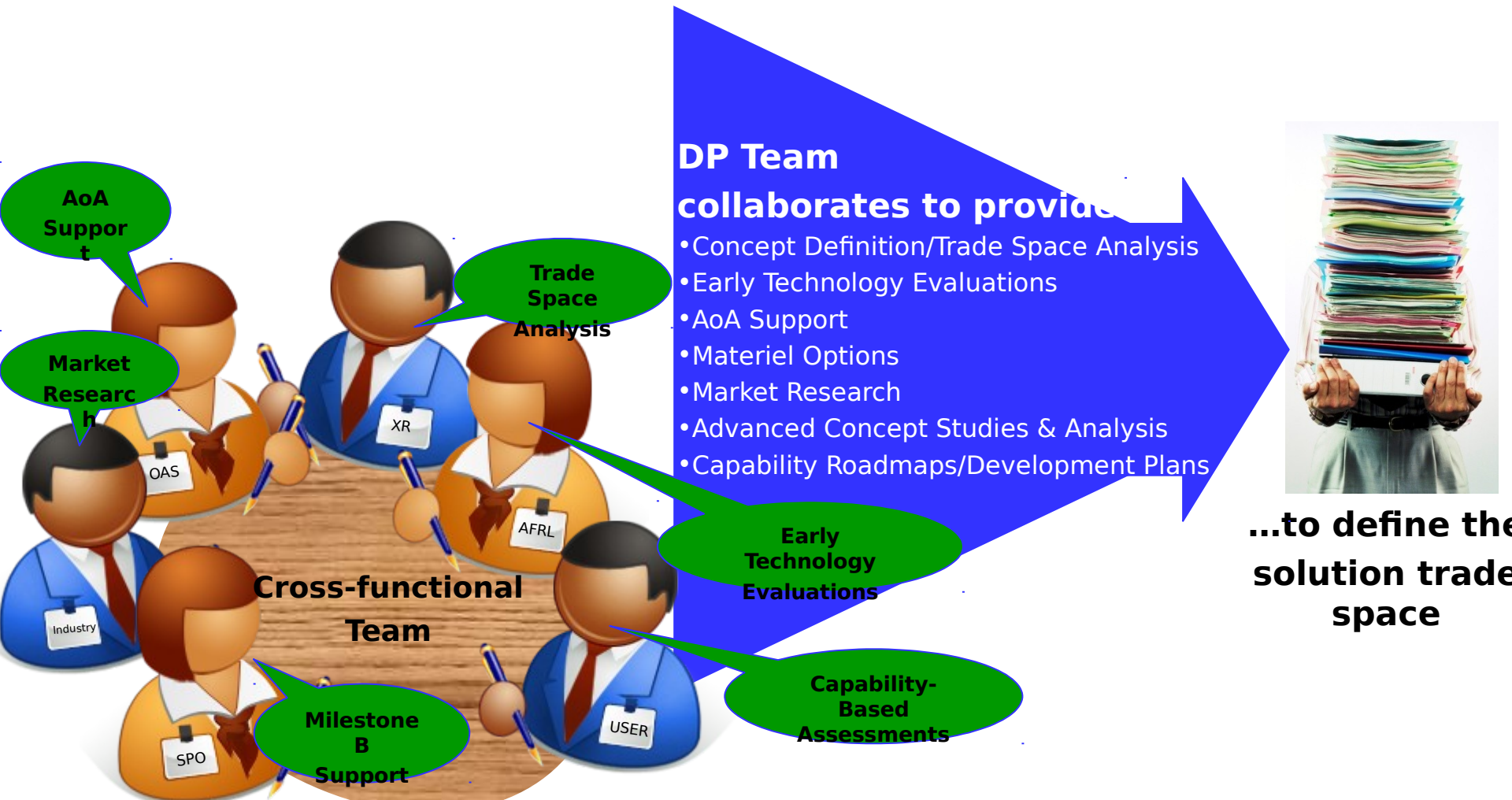
Reaches back into AFRL to identify necessary technology maturation

Development Planning

Looks ahead into the Program Offices to let them know what's on the horizon



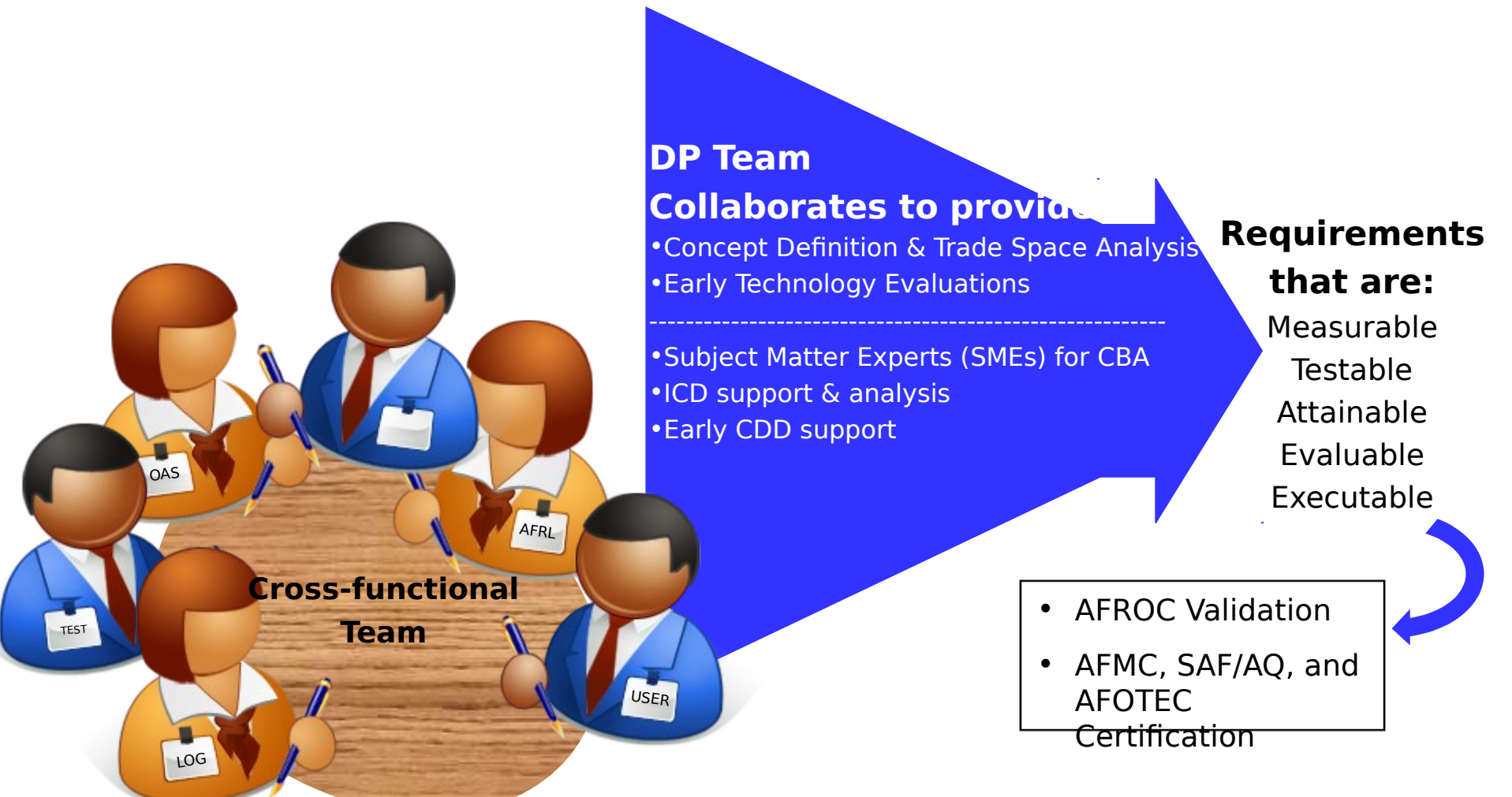
DP Team Provides Solution Options



DP defines materiel solution courses of action



DP Informs Requirements Generation



produces feasible, affordable, evaluable requirements



“MDD Information Needs”

ASD(SE) DTM 10-017, 13 Sep 2010

The MDA must ... decide whether an investment shall be made to fill the capability gap ... Decisions must be based on effective development planning and a strong technical foundation. To support those decisions, the (MDA requires) evidence at the MDD Review (to) facilitate the determination that:

- a. The candidate materiel solution approaches have the **potential to successfully address the capability gap(s) and associated dependencies**, and desired operational attributes.
- b. There exists a **range of technically feasible solutions** generated from **across the entire solution space**, as demonstrated through early **[AF add: studies, analyses,]** prototypes, models, or data.
- c. Consideration has been given to **near-term opportunities** to provide a **more rapid interim response** to the capability need.

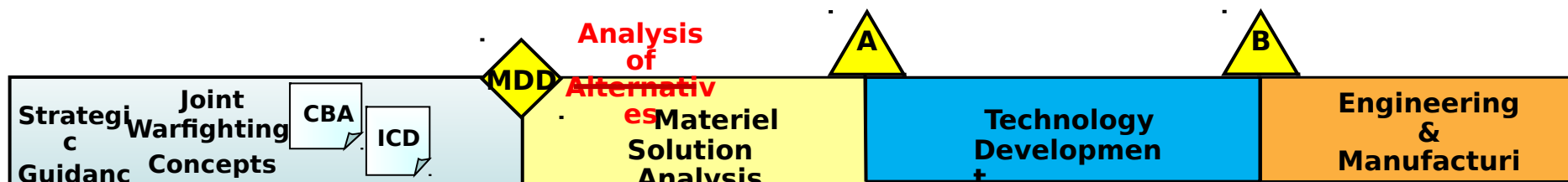
Decision Support Information:

- | | | | |
|---|---------------------------|---|----------------|
| > | Right Capability | > | Right Analysis |
| > | Right Investment Strategy | > | Right Program |



Shifting the Paradigm

- MDD (and Concept Decision before that) has been widely viewed as opportunity to decide **“What are we going to acquire?”**
- MDD is really an investment decision - **“Do we need to acquire anything to address this capability need?”**
 - An acceptable answer is “Not now; pursue S&T investment(s) and revisit the need in a few years”
 - Another acceptable answer is “More (or different utilization) of what we currently have”
- AoA Report provides information to ask **“What could we realistically afford to think about acquiring?”**
- Sponsor - with materiel support - develops COAs and proceeds to MS A with focus on **“What are we going to start down the path to acquire?”**

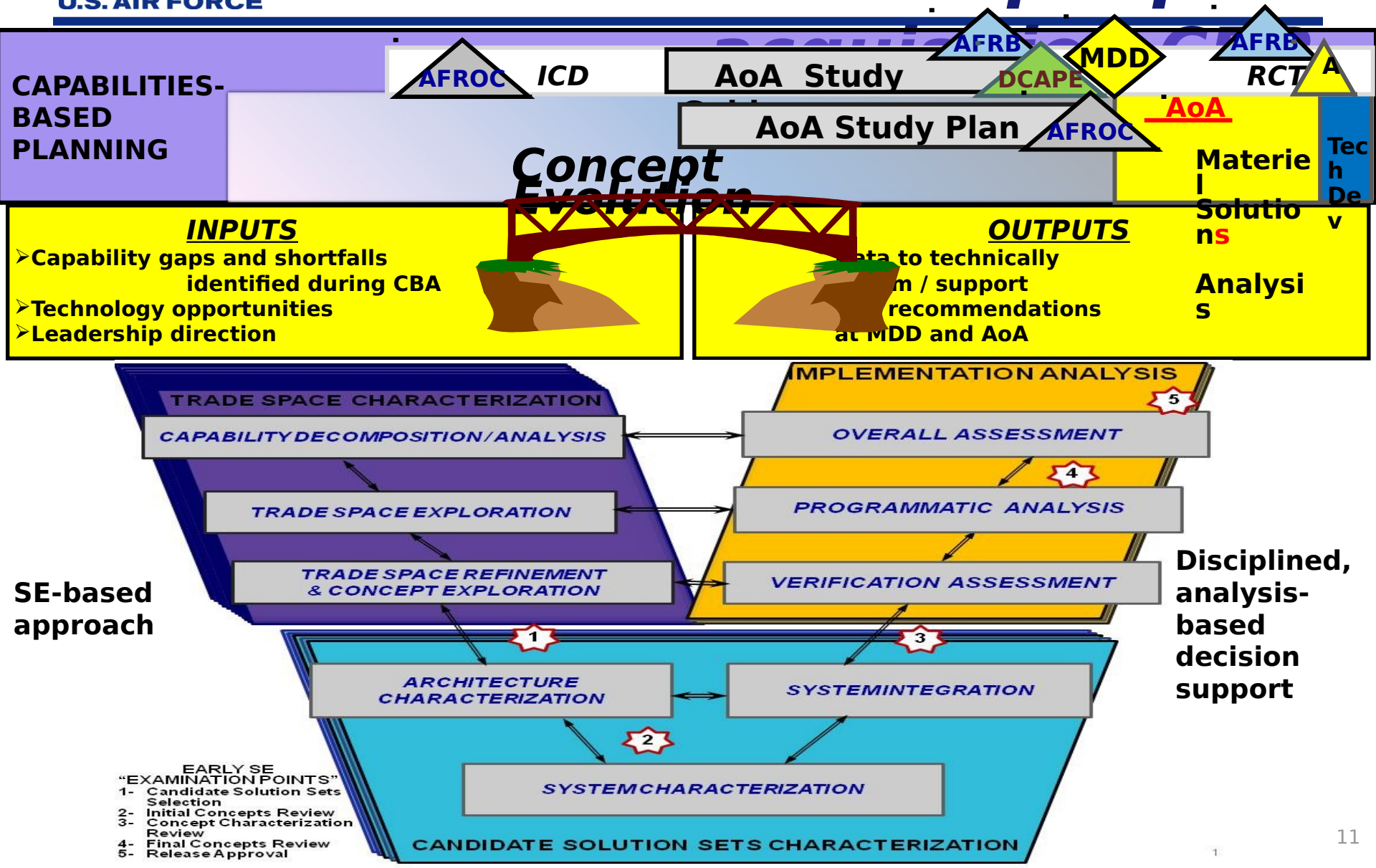


DP generates high-confidence estimates of cost, schedule, and technical performance to support MDD and MS A



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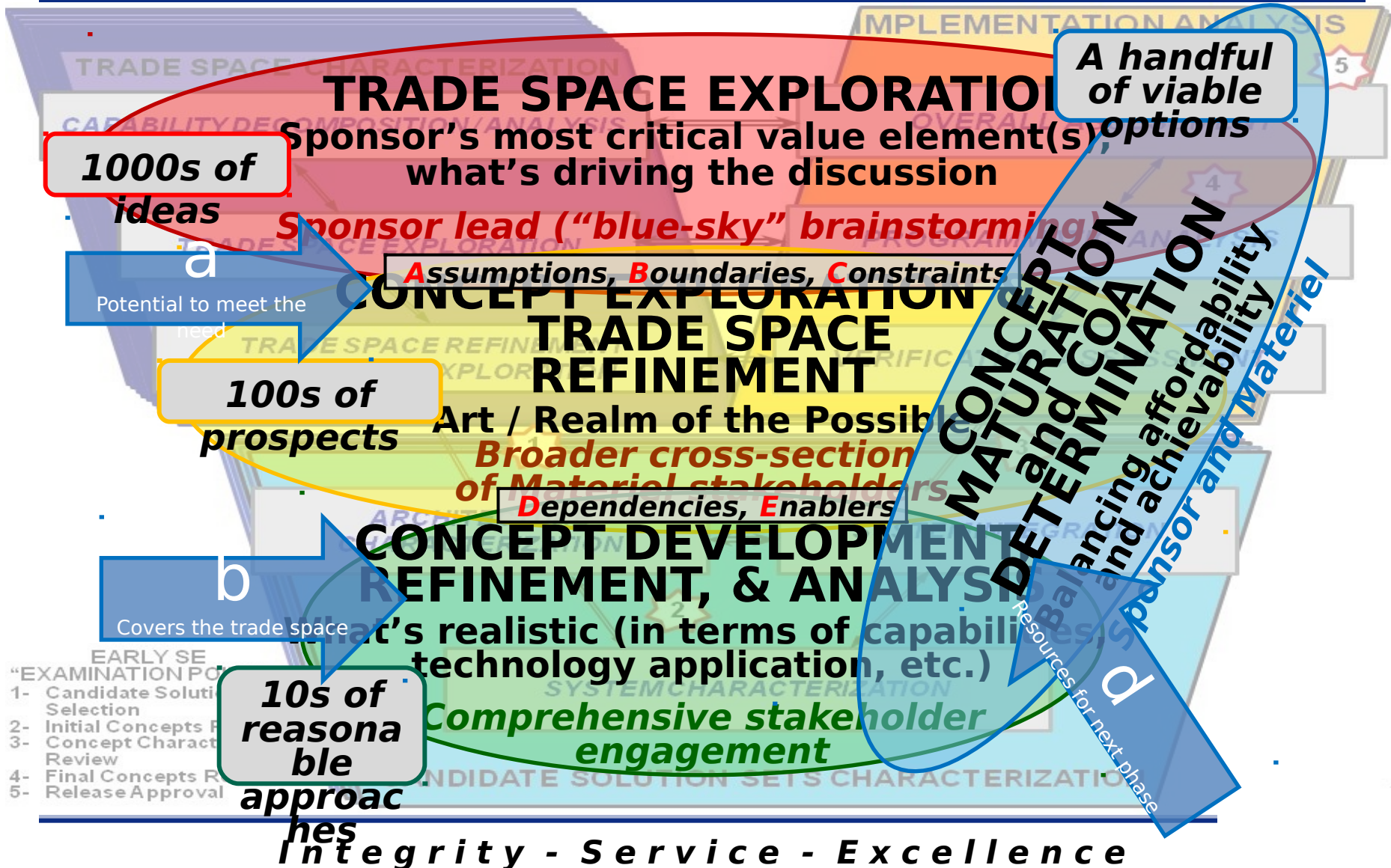
DP and Early SE underpin pre-





Fitting It All Together

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CCTD Content

1. Mission/Capability Need Statement/CONOPS (MOEs)

Stakeholders

2. Concept Overview (OV-1)

3. Trade Space Characterization

Scope

Assumptions and Constraints

Interfaces

Operating Environment (Draft Enabling CONOPS)

Key Parameters/Attributes/MOPs

Compliance Issues

4. Evaluation (Studies, Analyses, Experiments)

Common Assumptions and Methodologies

Parametric Studies

Analyses

Experiments

Modeling & Simulation (and Associated Data)

Evaluation Results

Conclusions

5. Concept Characterization/Design

Design Description & *Variants*

Concept of Employment

Architecture Considerations

(Interfaces/Interoperability/SoS Approach/Integration)

Critical Design Constraints

Critical Technology Elements

Supportability/Sustainment/Logistics Features

Cost Drivers

Required Enabling Capabilities

6. Program Characterization / Implementation Analysis

Critical Technologies (including S&T needs/feed-forward)

Technology Maturation Approach

T&E/V&V Approach

Prototyping Approach

Manufacturing/Producibility Approach

Sustainment/Supportability Approach

Other Relevant Considerations

Schedule Assumptions/Methodologies

Cost Analysis Assumptions and Methodologies

Cost Estimates

7. Risk Assessment and Decision-Certain Consequences

Operational Risk

Program Risk

Technology Risk

8. DOT_LPF Implications and other Interdependencies

9. Conclusions (Capability Description / Traceability to Need Statement)



Recent AF Guidance on DP and

Early Systems Engineering

- **SAF/AQ (Mr Vaughan) signed Guidance Memorandum (GM) for AFI 63-101 and AFI 63-1201 on 28 Jan and 15 Feb respectively**
 - GMs spell out AFMC and AFSPC roles and responsibilities in accomplishing DP
 - GMs identify AFMC and AFSPC as implementing commands for DP
- **HQ AFMC/AFSPC responsibilities:**
 - Provide governance of DP prior to MDD to ensure effective management and execution
 - Serve as DP Single Point of Entry (SPE) for requests for DP efforts (AFSPC for space and cyber; AFMC for other)
 - Prioritize and allocate sponsor requests consistent with AF priorities
 - Maintain cognizance of DP efforts for which there is no established program
- **AFMC/AFSPC Concept Development organization responsibilities:**
 - Collaborate with operational sponsors in trade space exploration and in development of prospective materiel solutions to identified capability needs
 - Develop Concept Characterization and Technical Descriptions (CCTD)
 - Manage execution of DP efforts until a formal acquisition program is established

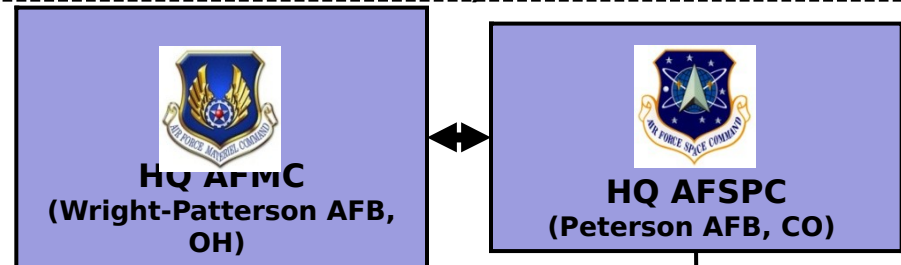


AF DP Structure

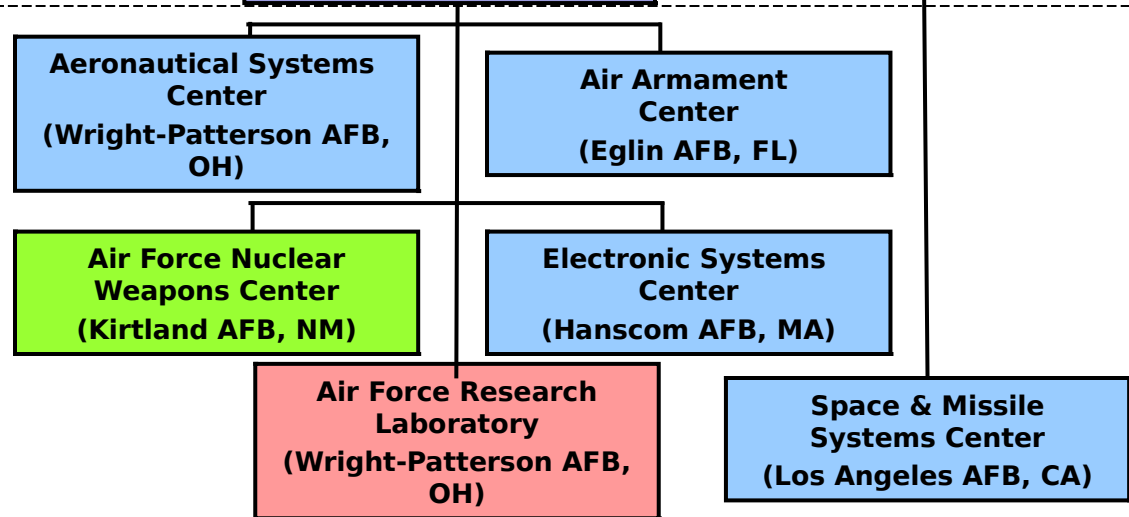
POLICY



GOVERNANCE



EXECUTION



SPONSORSHIP





- | | | | |
|---|---|-----------------------------------|--|
| <p align="center">FLY GIRL COMPLEX COMPANY
 IS A DIVISION OF ATLANTIC
 CONSTRUCTION COMPANY</p> | | <p align="right">2/1 JAN 1988</p> | |
| <p align="center">MEETING PAGE</p> | | | |
| <p>This document constitutes the organizational structure, personnel and operating procedures for the Western Region Headquarters and all other units under the direct supervision of the Western Region Commander. The Western Region Commander (WRM) and all other units of the Western Region are required to maintain the organizational structure and personnel of this document at all times. The Western Region Commander shall submit a report to the Air Force Headquarters and the Air Force Headquarters shall submit a report to the Air Force Headquarters and the Air Force Headquarters shall submit a report to the Air Force Headquarters.</p> | | | |
| <p><i>W. R. M.</i>
 Western Region Commander
 1000 West 10th St.
 Fort Worth, Texas 76102
 Air Force Headquarters</p> | <p><i>W. R. M.</i>
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 Fort Worth, Texas 76102
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| <p align="center">FY 1988
 AF Forces
 Development Planning Strategic Plan (DPSP)</p> | | | |
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| <p><i>W. R. M.</i>
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 Fort Worth, Texas 76102
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 Air Force Headquarters</p> | | |



**AFMC/CV,
AFSPC/CV**

**AFMC/A2/5,
AFSPC/A5**

**AFMC/A5C,
AFSPC/A5X**

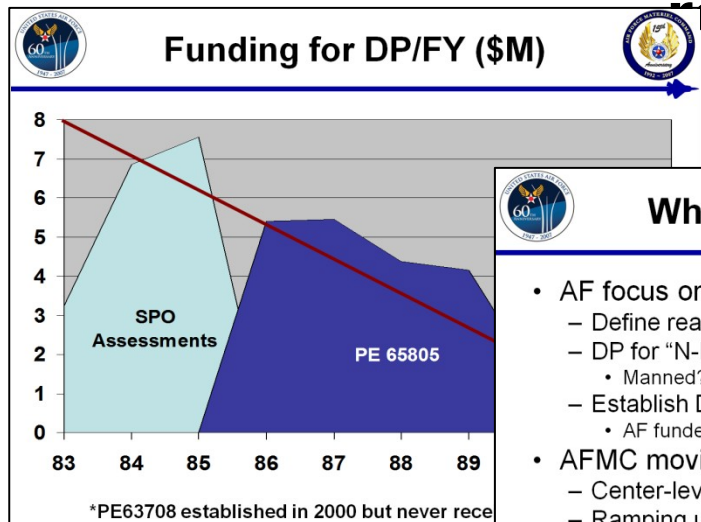
- **Orchestrates DP in support of the warfighter**
 - **Directs and monitors execution of RAM PE**
 - **Prioritizes AF DP workload via a disciplined process**
 1. **Assess efforts' value to the warfighter**
 2. **Using constraints, generate draft prioritized list of DP efforts**
 3. **Apply professional military judgment to produce a final list**





Requirements Analysis & Maturation (RAM) Program

In 2008, SAF/AQR and AFMC/CC saw the ~~Element~~ **Element (PE)** revitalized DP and advocated for re-establishment of a robust capability



What do we need to do?

- AF focus on developmental planning
 - Define realistic req'ts, focus tech, assess threat
 - DP for "N-NGF" must address questions
 - Manned? Industrial base? F-22 shortfalls? Technology
 - Establish DP as an AF program
 - AF funded, AFMC/CC managed
- AFMC moving forward
 - Center-level DP has been established/re-established
 - Ramping up HQ oversight of limited DP resources
 - Establish a collaborative environment with MAJCOMs
 - Deliver optimum materiel solutions for warfighter
 - Establish a strategic sight picture of USAF DP needs
 - FY10 POM submission to rebuild DP capability

Need MAJCOM to MAJCOM interface for optimal early developmental planning

Take away

- 1 year before F-4D 1st Flight
Planning began for the F-15
- 3 years before F-15A 1st Flight
Planning began for the F-22
- 6 years ago F-22 1st Flight...
We are behind the curve
Now over 13

RESULT: RAM PE and an AF-wide DP Governance Process established



Way Ahead for DP

- **FY11 DP Execution is under way**
- **FY12 Prioritization is in progress; vetting to occur thru DP Governance**
 - **Working Group - 15-17 Mar - COMPLETE**
 - **Board - 6 Apr - COMPLETE**
 - **Council - 17 May**



Summary

- **DP exists to support the warfighter**
- **DP workload allocations reflect user priorities and professional military judgment**
- **Current activity:**
 - **Executing FY11 efforts**
 - **Prioritizing FY12 requests**
 - **Advocating FY13 resources**



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Takeaways

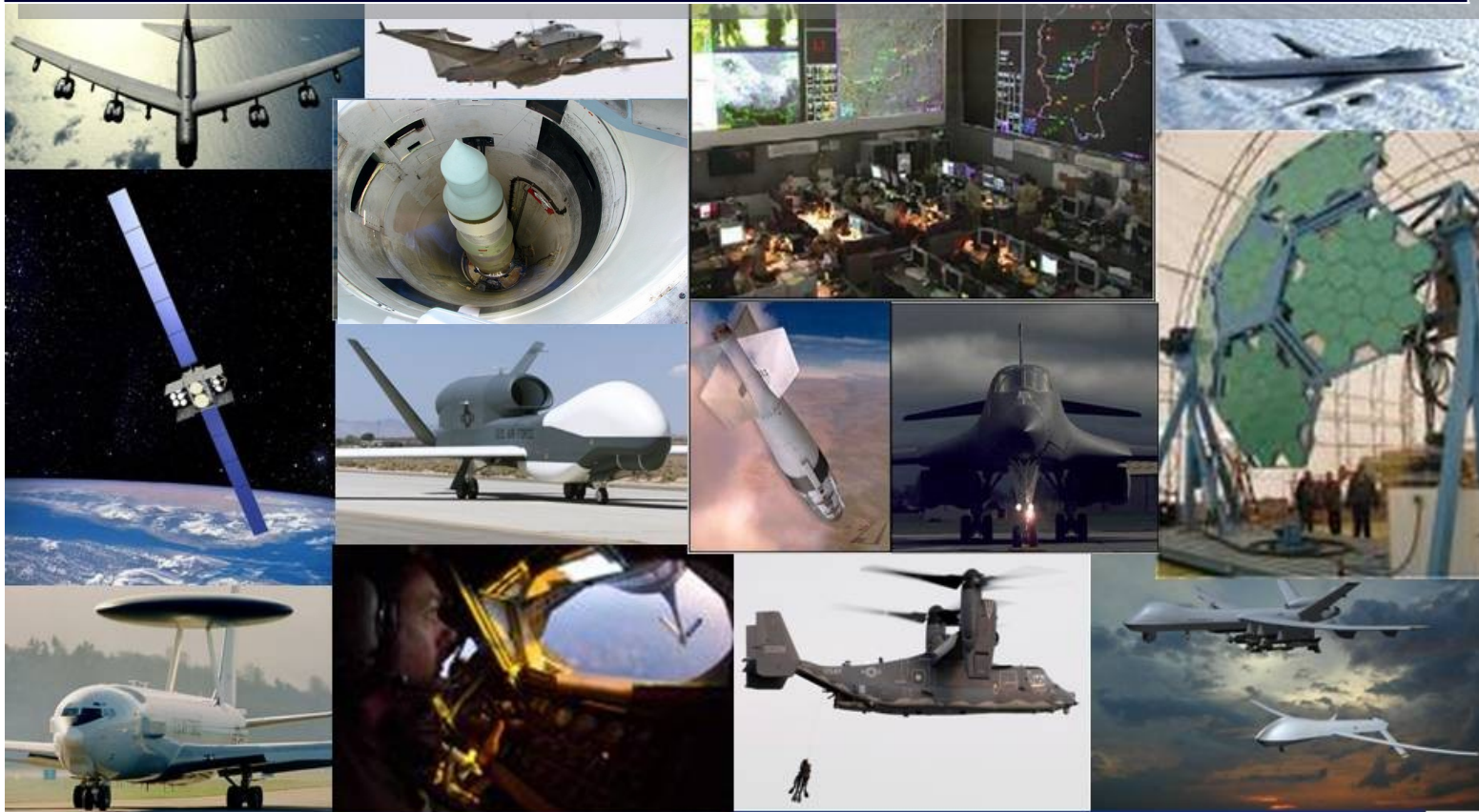
- **Operational users want capabilities, not just technology**
 - Capabilities are provided by platforms and systems
 - Technology must be “systemized” to be useful
- **DP ensures proper pre-acquisition analysis**
 - Early SE facilitates DP
 - S&T informs and enables early SE
- **CCTD is the primary Early SE artifact that captures pre-acquisition decision support information**
- **AF continues to put policy and directive guidance in place to institutionalize best practices**
 - Collaborating with OSD to influence Department policy/guidance

“DO IT RIGHT, DO IT EARLY; DO IT EARLY, DO IT RIGHT”



All leading to ...

ENHANCED COMBAT CAPABILITY FOR THE WARFIGHTER



Integrity - Service - Excellence